

CAPSOSIRA BRASILIENSIS,
A NEW SPECIES OF CAPSOSIRACEAE (CYANOPHYCEAE)
FROM SOUTHEASTERN BRAZIL

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ABSTRACT. — A new species of *Capsosira* Kützing (Cyanophyceae), namely *C. brasiliensis* Sant'Anna et F. Silva sp. nov., is described on morphological grounds from material collected from São Paulo State, Brazil. The alga was found as an epiphyte on *Stigonema robustum* Gardner and on *Batrachospermum* sp. plants growing on submerged rocks in clean, running, freshwater.

RÉSUMÉ. — Une nouvelle espèce de *Capsosira* Kützing (Cyanophyceae), nommée *C. brasiliensis* Sant'Anna et F. Silva sp. nov., a été décrite de l'État de São Paulo, Brésil. Cette algue d'eau douce est fixée sur *Stigonema robustum* Gardner et *Batrachospermum* sp. qui croissent sur les pierres dans les eaux propres et courantes.

KEY WORDS : *Capsosira*, *C. brasiliensis* sp. nov., Cyanophyceae, Brazil.

During the course of an investigation of the Cyanophyceae of the State of São Paulo, two extremely homogeneous populations of an epiphytic blue-green alga were found. This material forms cushion-like thalli around the host, with the lower surface pseudoparenchymatous, erect filaments with dichotomous and subdichotomous divergent branches, heterocysts which are generally intercalary, and reproduction by hormogonia or sometimes by terminal gonidia, a group of morphological features shared by none of the 4 species already described for the genus.

Populations studied were found on *Stigonema robustum* Gardner and *Batrachospermum* sp. growing on rocks submerged in rivers.

Capsosira brasiliensis sp. nov. (Fig. 1-8)

Thallus gelatinosus, pulvinatus, sphaericus vel subsphaericus brunneus, ad substratum affixus, 0,4-1,3 mm diametro; pars prostrata a filamentis irregularibus, incoloribus, lignos-brunneisve formata; pars erecta a ramis divergentibus filamentorum rigidorum plerumque uniseriatorum formata, 9,6-17,1(-20) µm

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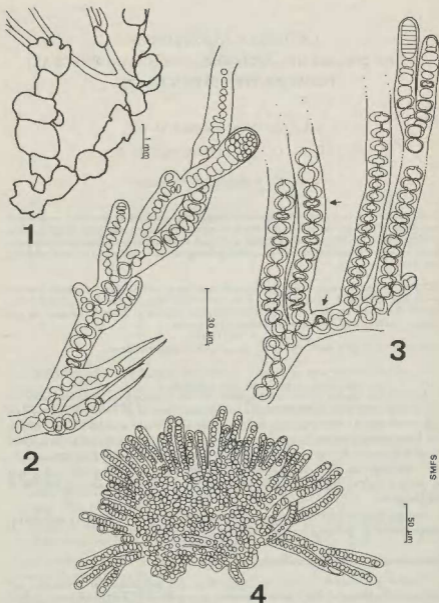


Fig. 1-4 : *Capsostira brasiliensis* sp. nov. — 1 : Habit of thallus. 2 : Adult filament showing terminal gonidia. 3 : Filaments with lateral and intercalary heterocysts. 4 : Prostrate and erect portions of thallus.

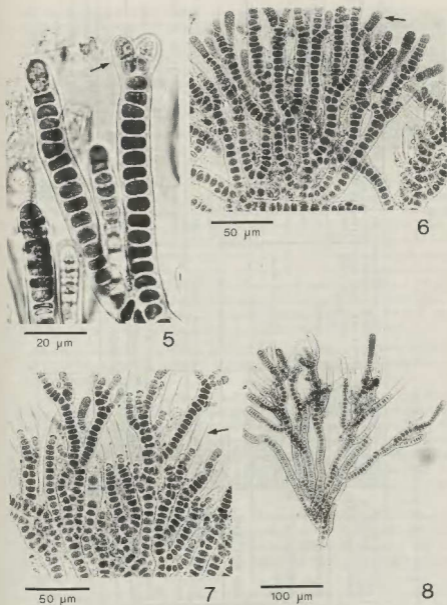


Fig. 5-8 : *Capsosira brasiliensis* sp. nov. — 5 : Young filaments showing beginning of branch formation. 6 : filaments with terminal hormogones. 7 : Empty sheaths after hormogone liberation. 8 : General aspect of plant showing divergent branching.

TABLE 1 - COMPARISON BETWEEN SPECIES OF CAPSOSIRA

Characters	<i>Capsosira viride</i> (Frémy) Bourrelly (= <i>Stauronemata viride</i> Frémy, 1930)	<i>Capsosira nigra</i> (Frémy) Bourrelly (= <i>St. nigrum</i> Frémy, 1930)	<i>Capsosira minutissima</i> (Geitler & Ruttner) Bourrelly (= <i>St. minu-</i> <i>tissima</i> Geitler & Ruttner, 1935)	<i>Capsosira brebissonii</i> Kützting ex Bornet & Flahault (cf. Frémy, 1930)	<i>Capsosira</i> <i>brasiliensis</i> sp. nov.
Thallus	crustaceous; gelatinous; green	crustaceous; firm; black	crustaceous - clear green to dark brown	cushion-like, sub- spherical; gelatinous; - -	cushion-like, spherical to subspherical; gelatinous; dark brown
Branches	few, divergent	parallel	-	closed	divergent
Filaments	rigid 10,0-20,0µm broad	rigid 6,5-8,0µm broad	- 3,0-4,0µm broad	flexuous 7,5µm broad	rigid 9,6-17,1(-20,0)µm broad
Vegetative cells	subquadratic; broader than long; 6,0-8,5µm broad	subquadratic; broader than long; 3,5-5,0µm broad	quadratic; broader than long; (2,0-)2,5-3,0µm broad	subspherical; - 4,0-5,0µm broad	subspherical, ellipsoidal to quadratic broader than long; 3,4-9,6µm broad
Heterocysts	abundant	rare	absent	frequent	frequent
Reproduction	discoid planococcus 6,0-8,0µm broad	discoid planococcus 3,0µm broad	- -	terminal hormogones formed by 10-20 cells	terminal hormogones formed by 2-12 cells; seldom terminal clavate gonidia

lata; vagina incolor ligneo-brunnaceae, homogenea, ad apicem lamellis rariter divergentes; trichoma strictum, 3,4-9,6 μm latum; cellulae subsphaericae, ellipsoideae vel quadratae, 1,5-7,5 μm longae, contentu aeruginoso, foveae connectionibus conspicuis; heterocystae intercalares, ellipsoideae, incolores vel flavidae, 2,8-3,4 μm longae, 5,8-6,8 μm latae, rariter laterales; reproductio a hormogoniis terminalibus, nonnumquam strictis, e cellulis 2-12 compositis, contentu aeruginoso, 9,6-35,5 μm longis, 4,0-8,4 μm latis; gonidia clavata, rariter terminalia, 13,4 μm lata.

Typus-Holotypus : Rivus Claro, municipium Biritiba Mirim, provincia Sanctus Paulus, Brasilia, collectus a O. Necchi Jr., 6.IV.1984 et in Herbario Institutii Botanici positus, Sancto Paulo, Brasilia (SP187181).

Thallus gelatinous, cushion-like, spherical to subspherical, dark brown, attached to the substrate, 0,4-1,3 mm diam.; prostrate portion formed by irregular, colourless to yellowish brown filaments; erect portion formed by divergent branches with rigid and generally uniseriate filaments, 9,6-17,1 (-20) μm broad; sheath colourless to yellowish brown, homogeneous, lamellations at apex seldom divergent; trichome constricted, 3,4-9,6 μm broad; cells subspherical, ellipsoidal to quadratic, 1,5-7,5 μm long, contents blue-green, pit connections conspicuous; heterocysts intercalary, ellipsoidal, colourless to yellowish coloured, 2,8-3,4 μm long, 5,8-6,8 μm broad, seldom lateral; reproduction by terminal homogones, constricted or not, formed by 2-12 cells, contents blue-green, 9,6-35,6 μm long, 4,0-8,4 μm broad; gonidia seldom terminal, clavate, 13,4 μm broad.

Material examined was found epiphytic on *Stigonema robustum* Gardner (SP187252) and *Batrachospermum* sp. (SP187181) growing on submerged rocks in clean running waters.

Initially the thallus of *Capsosira brasiliensis* is subspherical; later it completely wraps around the filaments of the host (Fig. 1). The erect filaments are divergent and generally uniseriate, but sometimes the cells divide perpendicularly to the regular axis of division (Fig. 6-7). In the young filaments, the cells are quadratic (Fig. 5), becoming ellipsoidal to subspherical with aging (Fig. 2). Although the heterocysts are generally intercalary, some lateral ones may occur (Fig. 3). Hormogones are abundant and always terminal (Fig. 6); there also are very rare terminal gonidia (Fig. 2).

This alga differs from all other known species of the genus *Capsosira* Kützing in having a cushion-like spherical to subspherical thallus (Fig. 1), an erect portion formed by dichotomous to subdichotomous, divergent branches (Fig. 8), filament greater in diameter, and reproduction by terminal homogones and gonidia.

According to Bourrelly (1970), the genus *Stauromatonema* Frémy should be considered identical to *Capsosira*, which would thus include four species (Table 1).

Capsosira brasiliensis is related to *C. brebissonii* Kützing ex Bornet et Flahault and *C. viride* (Frémy) Bourrelly. From the former it differs by rigid and divergent branches, filaments of greater diameter, and reproduction by gonidia

as well as by hormogones. From the latter, it differs in its cushion-like thallus and reproduction by hormogones.

The Brazilian material has some characteristics typical for *Capsosira* (thallus type, intercalary and lateral heterocysts and hormogone formation) and others of *Stauromatonema* (rigid filaments and divergent branches). This situation supports Bourrelly's proposition to include *Stauromatonema* in *Capsosira*, but the genus description should then be amplified in the following characters : - erect filaments sometimes biseriata; - reproduction seldomly by terminal gonidia.

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